US CLAIMS

1. A polypeptide which possesses inhibitory activity against human leukocyte elastase, said polypeptide being obtainable from psoriatic scales of human skin and possessing one or more of the following characteristics:

a) a molecular weight of about 9kD (as determined by SDS-PAGE);

b) an isoelectronic point at about pH.9.7 (as determined by isoelectronic focusing);

c) inhibitory activity against porcine pancreatic elastase in addition to human leukocyte elastase;

d) no significant activity against trypsin, human cathepsin G, Alpha-chymotrypsin and plasmin;

or a fragment thereof possessing inhibitory activity against human leukocyte elastase.

2. A polypeptide as claimed in claim 1 which comprises an amino acid sequence selected from:

a) -Ala-Gln-Glu-Pro-Val-Lys-Gly-Pro-

b) -Ala-Gln-Glu-Pro-Val-Lys-Gly-Pro-Val-Ser-Thr-Lys-Pro-Gly-Ser-Cys-Pro-Ile-Ile-Leu-

c) -Ala-Gln-Glu-Pro-Val-Lys-Gly-Pro-Val-Ser-Thr-Lys-Pro-Gly-Ser-Cys

d) -Ala-Gln-Glu-Pro-Val-Lys-Gly-Pro-Val-Ser-Thr-Lys-Pro-Gly-Ser-Cys-Pro-Ile-Ile-Leu-Ile-Arg-Cys-Ala-Met-Leu-Asn-Pro-Pro-Asn-Arg-Cys-Leu-Lys-Asp-Thr; and

e) Lys-Gly-Pro-Val-Ser-Thr-Lys-Pro-Gly-Ser-Cys-Pro-Ile-Ile-Leu-Ile-Arg-Cys-Ala-Met-Leu-Asn-Pro-Pro-Asn-

3. A polypeptide as claimed in claim 1 which comprises an amino acid sequence selected from:

Asn-Gly-Gln-Asp-Pro-Val-Lys-Gly-Gln-Val-Ser-Val-Lys-Gly-Gln-Asp-Lys-Val-Lys-Ala-Gln-Glu-Pro-Val-Lys-Gly-Pro-;

Gly/Ala-Gln/Val-Asp-Lys-Val-Lys-Ala-Gln-Glu-Pro-Val-Lys-Gly-Pro-Val-Ser-Thr-Lys-Pro-Gly-Ser-Cys-Pro-Ile-Ile-Leu-;

Asp-Lys-Val-Lys-Ala-Gln-Glu-Pro-Val-Lys-Gly-Pro-Val-Ser-Thr-Lys-Pro-Gly-Ser-Cys;

Gly/Val-Lys-Ala-Gln-Glu-Pro-Val-Lys-Gly-Pro-Val-Ser-Thr-Lys-Pro-Gly-Ser-Cys-Pro-Ile-Ile-Leu-Ile-Arg-Cys-Ala-Met-Leu-Asn-Pro-Pro-Asn-Arg-Cys-Leu-Lys-Asp-Thr; and

the sequence of formula I (set out hereinafter).

4. A polypeptide having all or part of the primary structure of formula I

Ala-Gln-Glu-Pro-Val-Lys-Gly-Pro-Val-Ser-Thr-Lys-Pro-Gly-Ser-Cys-Pro-Ile-Ile-Leu-Ile-Arg-Cys-Ala-Met-Leu-Asn-Pro-Pro-Asn-Arg-Cys-Leu-Lys-Asp-Thr-Asp-Cys-Pro-Gly-Ile-Lys-Lys-Cys-Cys-Glu-Gly-Ser-Cys-Gly-Met-Ala-Cys-Phe-Val-Pro-Gln (Formula I)

and fragments thereof, which polypeptide or fragments possess inhibitory activity against human leukocyte elastase, and compounds capable of being modified in vivo or in vitro to said polypeptide or fragments.

5. A polypeptide as claimed in claim 4 which comprises all or part of the following primary structure and fragments thereof.

Lys-Gly-Pro-Val-Ser-Thr-Lys-Pro-Gly-Ser-Cys-Pro-Ile-Ile-Leu-Ile-Arg-Cys-Ala-Met-Leu-Asn-Pro-Pro-Asn-

which polypeptide or fragments possess inhibitory activity against human leukocyte elastase, and compounds capable of being modified in vivo or in vitro to said polypeptide or fragments.

6. A polypeptide as claimed in claim 4 which is preceded by one or more amino acid residues selected from

Asn-Gly-Gln-Asp-Pro-Val-Lys-Gly-Gln-Val-Ser-Val-Lys-Gly-Gln-Asp-Lys-Val-Lys-;

Gly/Ala-Gln/Val-Asp-Lys-Val-Lys-;

Asp-Lys-Val-Lys-; and

Gly/Val-Lys-.

7. A polypeptide fragment or analogue thereof as defined in any one of claims 1 or 4 as produced by recombinant DNA technology.

8. A DNA sequence which codes for a polypeptide as defined in claim 7.

9. A DNA sequence which comprises:

a) a DNA sequence set forth in Figure 13 or a fragment thereof, or its complementary strand;

b) a DNA sequence which hybridises to a DNA sequence in Figure 13 or to a fragment thereof; or

c) a DNA sequence which, but for the degeneracy of the genetic code, would hybridise to a DNA sequence in Figure 13, or a fragment thereof.

10. A DNA sequence as claimed in claim 9 in which the fragment of DNA sequence set forth in Figure 13 comprises that portion which codes for the polypeptide of formula I.

11. A DNA sequence which comprises substantially the DNA sequence set forth in Figure 14 or 16 or its complementary strand.

12. A replicable plasmidic expression vehicle capable, in a transformant host, of expressing a polypeptide as claimed in claim 7.

13. A transformant host capable of expressing a polypeptide as defined in claim 7, said host comprising a replicable plasmidic expression vehicle as defined in claim 12.

14. An antibody effective to bind to at least a fragment of a polypeptide as defined in claim 1 or 4.

15. A polynucleotide probe which comprises a nucleotide sequence capable of hybridising to a DNA sequence as defined in claim 8.

16. A process for the preparation of a replicable expression vehicle as claimed in claim 12, said process comprising inserting a gene coding for a polypeptide as defined in claim 7 into a vector at an appropriate insertion site so that a replicable plasmidic expression vehicle is obtained which is capable of directing the synthesis of a polypeptide as defined in claim 7.

17. A process for producing a polypeptide as defined in claim 7, said process comprising culturing a host cell transformed with replicable plasmidic expression vehicle of claim 12.

18. A process for the preparation of a transformant host as defined in claim 13, said process comprising transforming a host by the insertion therein of a replicable expression vehicle as defined in claim 12.

19. A pharmaceutical composition comprising a polypeptide as defined in any one of claims 1, 4 or 7 in association with a pharmaceutically acceptable diluent or carrier.

20. A method of treating a warm-blooded animal; comprising administering a polypeptide as defined in any one of claims 1, 4 or 7 to said warm-blooded animal.

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